Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army											Date: February 2020	
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 2: *Applied Research*					R-1 Program Element (Number/Name) PE 0602303A *I Missile Technology*							
COST ($ in Millions)	**Prior Years**	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
Total Program Element	-	90.496	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	90.496
214: *Missile Technology*	-	48.996	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	48.996
G05: *MISSILE TECHNOLOGY INITIATIVES (CA)*	-	41.500	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	41.500

Note

In Fiscal Year (FY) 2020, this Program Element (PE) is realigned with continuity of effort to the following PEs:
PE 0602147A Long Range Precision Fires Technology
PE 0602148A Future Vertical Lift Technology
PE 0602150A Air and Missile Defense Technology

A. Mission Description and Budget Item Justification

This PE designs, fabricates and evaluates advanced component technologies for tactical missiles, rockets, guided munitions, and their launch systems in order to increase lethality, precision, and effectiveness under adverse battlefield conditions while reducing system cost, size and weight. Major goals in Project 214 include enhancing the survivability of the munition, launch and fire control systems and increasing kill probabilities against diverse targets.

Work in this PE is complimentary to PE 0603313A (Missile and Rocket Advanced Technology) and fully coordinated with PE 0602307A (Advanced Weapons Technology), PE 0602618A (Ballistics Technology), PE 0602624A (Weapons and Munitions Technology), PE 0603004A (Weapons and Munitions Advanced Technology), PE 0602782A (Command, Control, Communications Technology), and PE 0708045A (End Item Industrial Preparedness Activities).

Beginning in FY20, work in this PE is complimentary to PE 0603464A (Long Range Precision Fires Advanced Technology), PE 0603465A (Future Vertical Lift Advanced Technology), PE 0603463A (Network/C3I Advanced Technology), and PE 0603466A (Air and Missile Defense Advanced Technology).

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

Work in this Project is performed by the United States Army Futures Command (AFC).

Exhibit R-2, RDT&E Budget Item Justification: PB 2021 Army					Date: February 2020
Appropriation/Budget Activity 2040: *Research, Development, Test & Evaluation, Army I* BA 2: *Applied Research*		R-1 Program Element (Number/Name) PE 0602303A *I Missile Technology*			
B. Program Change Summary ($ in Millions)	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**
Previous President's Budget	91.647	0.000	0.000	-	0.000
Current President's Budget	90.496	0.000	0.000	-	0.000
Total Adjustments	-1.151	0.000	0.000	-	0.000
• Congressional General Reductions	-	-			
• Congressional Directed Reductions	-	-			
• Congressional Rescissions	-	-			
• Congressional Adds	-	-			
• Congressional Directed Transfers	-	-			
• Reprogrammings	-	-			
• SBIR/STTR Transfer	-1.151	-			

Congressional Add Details ($ in Millions, and Includes General Reductions)	FY 2019	FY 2020
Project: G05: *MISSILE TECHNOLOGY INITIATIVES (CA)*		
Congressional Add: *Carbon composite warhead research*	6.500	-
Congressional Add: *Additive manufacturing to support optimized long range precision fires*	10.000	-
Congressional Add: *Air vehicle development and sustainment*	15.000	-
Congressional Add: *Enterprise science and technology prototyping*	10.000	-
Congressional Add Subtotals for Project: G05	41.500	-
Congressional Add Totals for all Projects	41.500	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army										Date: February 2020		
Appropriation/Budget Activity 2040 / 2					R-1 Program Element (Number/Name) PE 0602303A / *Missile Technology*				Project (Number/Name) 214 / *Missile Technology*			
COST ($ in Millions)	**Prior Years**	**FY 2019**	**FY 2020**	**FY 2021 Base**	**FY 2021 OCO**	**FY 2021 Total**	**FY 2022**	**FY 2023**	**FY 2024**	**FY 2025**	**Cost To Complete**	**Total Cost**
214: *Missile Technology*	-	48.996	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	48.996

Note

In Fiscal Year (FY) 2020 this Project is realigned to:
Program Element (PE) 0602147A Long Range Precision Fires Technology:
* Project AE7 Land-Based Anti-Ship Missile (LBASM) Technology
* Project AF1 Long Range Maneuverable Fires (LRMF) Technology
* Project AF3 Extended Range Propulsion Technology
* Project AF5 Simulation and Aerostructures Technology
* Project AF6 Structures Technology
* Project AF7 Warhead Integration Technology
* Project AF8 Affordable Extended Range Precision Technology
* Project AF9 Precision and Accuracy Technology
* Project AG1 Missile Electronics Technology
* Project AG2 Information and Signal Processing Technology
* Project AG9 Multiple Simul Engagement Technologies (MSET) Tech
* Project AH2 Single Multi-mission Attack Missile (SMAM) Technol

PE 06020148A Future Vertical Lift Technology:
* Project AK4 Multi-Role Small Guided Missile Technology

PE 0602150A Air and Missile Defense Technology:
* Project AD3 Maneuver Air Defense Technology
* Project AD5 Next Generation Fires Radar Technology
* Project AD7 Missile Fire Control Sensors Technology

A. Mission Description and Budget Item Justification

This Project designs, fabricates, and evaluates missile and rocket component technologies that support demonstration of affordable, lightweight, highly lethal missiles and rockets. Major areas of research include: guidance, navigation, and controls; target acquisition systems; multi-spectral seekers; high-fidelity simulations; sustainment; aerodynamics and structures; launch systems, fire control technologies; payloads; and propulsion including research to help solve the insensitive munitions requirements. A theme embedded throughout the efforts in this project is smaller, lighter, and cheaper (SLC) missile technology to reduce the cost and logistical burden of precision munitions.

This Project supports the Army Science and Technology Lethality and Command, Control, Communications and Intelligence (C3I) portfolios.

Major products of this Project transition to PE 0603313A (Missile and Rocket Advanced Technology).

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602303A / *Missile Technology*	**Project (Number/Name)** 214 / *Missile Technology*

The cited work is consistent with the Under Secretary of Defense for Research and Engineering priority focus areas and the Army Modernization Strategy.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
Title: Missile Seeker Technology ***Description:*** This effort focuses on the design, fabrication and evaluation of missile seekers, sensors, and software. The goal is to increase affordability and performance of missile seekers through improvement of algorithms, imaging, and thermal management.	4.648	-	-
Title: Missile Guidance, Navigation and Controls Technologies ***Description:*** This effort designs, fabricates and evaluates guidance, navigation, and control systems and software, as well as information and signal processing systems for rocket and missile applications. Goals of this effort include more affordable missile guidance; miniaturization of guidance electronics; maintaining performance in Global Positioning System (GPS) denied environments; improved image processing; improved missile power systems; improved communication with ground and other systems; technologies to track and respond to threat and offensive munition swarms.	8.225	-	-
Title: Missile Fire Control Systems, Sustainment, Simulations, and Launchers ***Description:*** This effort designs and evaluates fire control and tracking sensor technologies for area protection and air defense, technologies to increase the longevity of developed missiles and reliability, advanced simulations to increase performance and reduce size, weight, and cost of missile systems, and launcher technology to deliver effects from air and ground platforms.	6.851	-	-
Title: Missile Propulsion, Structures, Lethality, and Aerodynamic Technology ***Description:*** This effort designs, fabricates, evaluates and tests missile enabling technologies including: advanced missile propulsion with reduced launch signatures; increased lethality and reduced weight and size using advanced materials and additive manufacturing. Missile Propulsion, Structures and Lethality efforts are in coordination with PE 0602618A (Ballistics Technology) / Project H80 (Survivability and Lethality Technology) and PE 0602624A (Weapon and Munition Technology) / Project H28 (Warheads/Energetics Technologies).	7.142	-	-
Title: Multi-Role Missile Technology ***Description:*** This effort evaluates critical technology and designs component for future affordable rockets and missiles to provide overwhelming defeat of conventional and asymmetrical threats in all environments.	1.728	-	-
Title: Air Defense Missile Technologies ***Description:*** This effort evaluates and provides technologies and performs necessary trade studies to provide the key components for maturation and demonstration of air defense missiles to counter threats such as UAS and cruise missile systems.	8.300	-	-

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army		Date: February 2020
Appropriation/Budget Activity 2040 / 2	**R-1 Program Element (Number/Name)** PE 0602303A / *Missile Technology*	**Project (Number/Name)** 214 / *Missile Technology*

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020	FY 2021
Title: Affordable Precision Missile Enabling Technology ***Description:*** This effort focuses on the studies, design, establishment, fabrication, and evaluation of components and subsystems critical to produce affordable discriminate extended range precision missiles. Critical component technologies include: advanced propulsion, seekers/sensors, fire control, datalink, guidance, navigation and controls, and airframes.	2.223	-	-
Title: Long Range Fires Enabling Technology ***Description:*** This effort focuses on performing the necessary trade studies, and designing, establishing, fabricating and evaluating critical component technologies needed to support a long range fires capability.	6.552	-	-
Title: Cooperative Engagement Lethality Technology ***Description:*** This effort investigates critical component technology and designs for future missiles that provide expeditionary, scalable, precision strike and loiter capability to rapidly defeat hard targets and swarming or disbursed threats at the Tactical Edge. Provides the missile technology path to supervised autonomous target detection and cooperative engagement/manned-unmanned teaming for offensive, multiple simultaneous engagement capabilities.	3.300	-	-
Title: FY 2018 NDAA SEC 825 MDAP Cost Overrun ***Description:*** FY 2018 NDAA SEC 825 MDAP Cost Overrun	0.027	-	-
Accomplishments/Planned Programs Subtotals	48.996	-	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A

Exhibit R-2A, RDT&E Project Justification: PB 2021 Army			Date: February 2020
Appropriation/Budget Activity 2040 / 2	R-1 Program Element (Number/Name) PE 0602303A / *Missile Technology*	Project (Number/Name) G05 / *MISSILE TECHNOLOGY INITIATIVES (CA)*	

COST ($ in Millions)	Prior Years	FY 2019	FY 2020	FY 2021 Base	FY 2021 OCO	FY 2021 Total	FY 2022	FY 2023	FY 2024	FY 2025	Cost To Complete	Total Cost
G05: *MISSILE TECHNOLOGY INITIATIVES (CA)*	-	41.500	0.000	0.000	-	0.000	0.000	0.000	0.000	0.000	0.000	41.500

Note

Congressional Program increase for Fiscal Year 2019 (FY19).

A. Mission Description and Budget Item Justification

This is a Congressional Interest Item.

B. Accomplishments/Planned Programs ($ in Millions)	FY 2019	FY 2020
Congressional Add: Carbon composite warhead research ***FY 2019 Accomplishments:*** Carbon composite warhead research	6.500	-
Congressional Add: Additive manufacturing to support optimized long range precision fires ***FY 2019 Accomplishments:*** Additive manufacturing to support optimized long range precision fires	10.000	-
Congressional Add: Air vehicle development and sustainment ***FY 2019 Accomplishments:*** Air vehicle development and sustainment	15.000	-
Congressional Add: Enterprise science and technology prototyping ***FY 2019 Accomplishments:*** Enterprise science and technology prototyping	10.000	-
Congressional Adds Subtotals	41.500	-

C. Other Program Funding Summary ($ in Millions)

N/A

Remarks

D. Acquisition Strategy

N/A